

**FACT SHEET FOR STATE WASTE DISCHARGE
PERMIT NO. ST-5528**

**TOWN OF CONCONULLY
PUBLICLY-OWNED TREATMENT WORKS (POTW)**

SUMMARY

The Town of Conconully is seeking reissuance of its State Waste Discharge Permit for its POTW. The town's treatment plant consists of a three-cell lagoon and an adjacent sprayfield. In addition to treating wastewater from residences and the few businesses within town limits, service is provided to nearby tourist resorts along the shores of Conconully Lake and Conconully Reservoir.

The previous permit required the Town to submit a comprehensive Engineering Report to evaluate the lagoon and land treatment (sprayfield) system for compliance with the State's Ground Water Quality Standards and public health regulations regarding sprayfield management. The permit also required the Town to submit a monitoring program to verify compliance with the Ground Water Quality Standards on an ongoing basis. Updates of the existing O&M Manual and the Town's sewer use ordinance were also required. The Town has fulfilled all these requirements.

Briefly, the assessment of the lagoon system found the level of treatment to be typical of such systems. Furthermore, the soils evaluation conducted in support of the sprayfield evaluation found no evidence of nutrient overloading of soils. Although definitive proof of compliance with the Ground Water Quality Standards awaits results of ground water monitoring, the Department finds these preliminary results encouraging. Finally, the Town's sprayfield was found to be in compliance with the State Department of Health's setback requirements.

As a result of the work the Town accomplished during the previous permit cycle, the requirements of this permit have been minimized to the extent possible. Although this permit requires the Town to commence ground water monitoring, once baseline pollutant concentrations in the ground water have been established and the question of ground water degradation has been addressed, the Town may request a reduction of the associated monitoring requirements of this permit.

This permit requires the Town to install a composite sampler to allow representative monitoring of influent loadings to the lagoon system. The Town is also required to update its O&M Manual. This requirement was contained in the previous permit, but was deferred by the Department until completion of the lift station upgrade. The update to the O&M Manual is required to include a revision to the Sprayfield Management Plan so that it includes sprayfield loading limits and the sprayfield monitoring plan. This revision to the Sprayfield Management Plan is necessary because the plan is a key component of Special Conditions S1 and S2 of this permit. The Sprayfield Management Plan is to be incorporated into the O&M Manual as Appendix A.

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST-5528. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the State is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Spokane Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments

GENERAL INFORMATION	
Applicant	Town of Conconully
Facility Name and Address	Town of Conconully POTW 219 Main Street Conconully, WA 98819
Type of Treatment System	Three cell lagoon system and sprayfield
Discharge Location	Latitude: 48° 32' 23" N Longitude: 119° 44' 27" W
Legal Description of Application Area	SE ¼ of Section 7 and the NE ¼ of Section 18, Township 35 N, Range 25 E. W. M.
Contact at Facility	Name: Leland Moore Telephone #: (509) 826-2833
Responsible Official	Name: Marcus Bertrand Title: Mayor

BACKGROUND INFORMATION

The Town of Conconully (Town) lies between Conconully Lake and the Conconully Reservoir in Okanogan County. The Town has a permanent population of approximately 170 persons. The area's economy is oriented primarily towards summer recreation. The Conconully Lakes area, which includes the Town, Conconully State Park, and full-time and seasonal residences on the shores of Conconully Lake and Conconully Reservoir, experiences influxes of as many as 3,000 people per day during the peak summer season. Waters of the lake and reservoir are used for boating, fishing, swimming and as sources of irrigation water.

The previous permit required the Town to submit an Engineering Report to comprehensively address a number of POTW deficiencies. These deficiencies included:

- Lack of sprayfield loading limits;
- Uncertainty of the facility's compliance with the State's Ground Water Quality Standards;
- Uncertainty of the facility's compliance with the State Department of Health's Standards for Municipal Land Treatment Systems; and,
- Severe corrosion of the lift station caused by years of exposure to hydrogen sulfide gas.

The Town chose to develop a more comprehensive Facility Plan, in lieu of an Engineering Report, to facilitate its search for funding to implement the upgrade. The Facility Plan was approved by the Department on February 18, 2003. The description of the collection and treatment systems that follow contains brief summaries of findings and conclusions contained in the Facility Plan. More detailed information may be accessed in the *Town of Conconully Wastewater Treatment Facility Plan*, dated January 2003.

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

History

The Town's wastewater treatment plant and sewage collection system were constructed to address public health and water quality problems caused by failing individual onsite septic systems. Construction occurred in two phases. The first phase of construction, which occurred in 1979-80, provided for the collection, transport, treatment, and disposal of wastewater from the Town and the state park. The second phase occurred in 1990 and consisted of construction of septic tank effluent pumping (STEP) systems along the shores of the nearby lake and reservoir. These STEP systems were tied into the Town's collection system between the pump station and the lagoon site.

First phase of construction-Construction of urban core wastewater facilities

A conventional gravity collection system serves the entire Town and the nearby state park. The collection system consists of 8-inch diameter PVC sanitary sewer lines, a lift station and a service building located on the south side of town, next to the Salmon Creek Bridge.

The collection system empties into a flow equalization tank designed to handle the high fluctuations in wastewater flows between summer and winter. The equalization tank has two chambers with a total capacity of 1,000 cubic feet.

Wastewater then enters a package-type pump station. The pump station wet well has a capacity of 15,000 gallons. Low sewage flows during the winter months can result in long wet well detention times and create odor problems. Aeration and chlorination are available at the pump station for odor control. Aeration can also be used in the wet well during periods of heavy BOD loadings prior to pumping to the lagoons.

A magnetic flow meter is located on the pump discharge line in the lift station control building. A flow meter located at the edge of the state park measures flows from the park. Flows from the STEP systems enter the force main (between the pump station and the lagoon) after the magnetic flow meter; therefore, STEP system flows are not directly monitored. However, the operator monitors the pump running time counter, approximating STEP system flows through calculation.

Wastewater is then pumped through a 6-inch PVC force main to the treatment lagoons, located one-half mile south of town, above the Conconully Reservoir at Graveyard Flats. The Conconully wastewater treatment plant consists of three facultative lagoon cells. Cells are lined with 20 mil polyvinyl chloride membrane sheet. Wastewater receives progressively higher levels of treatment in each cell. The design volume of the lagoon cells allows for the storage of wastewater during the non-irrigation season. The total capacity of the three cells is 11.78 million gallons. During the late summer and early autumn lagoon water levels are drawn down to allow

for winter storage. Lagoon #1 is equipped with an aeration system to prevent odor problems resulting from anaerobic conditions.

An irrigation pump station is located at the south end of the polishing cell. Treated effluent can be drawn from several levels within this cell. Wastewater is pumped to the privately owned irrigation system of the adjacent landowner, Berney Ranch, Inc. The town has a lease agreement for use of the property on which the lagoons are located in exchange for Berney's use of treated effluent for irrigation water. Treated wastewater is utilized as irrigation water on up to 22 acres of privately-owned agricultural land during the irrigation season. Generally, only 15 acres of the sprayfield are utilized for land treatment of the Town's wastewater.

Second phase of construction-Service extended to outlying areas

In 1990 sewer service was provided to resorts and lakeshore homes outside of the town limits. STEP systems were constructed at Liar's Cove Resort and Shady Pines Resort on Conconully Reservoir and Fleming's Resort on Conconully Lake and connected to the Town's collection system. A STEP system has the advantage of discharging a lower-strength wastewater to the main treatment system, so that the organic loading capacity of the treatment plant is not overburdened, and the service life of the system is extended.

All lakeshore properties served by the STEP systems are located on land owned by the Federal Bureau of Reclamation. The STEP systems are owned and operated by Okanogan County and are outside the incorporated limits of the Town.

Collection System Status

The Town's collection system has worked well since its completion in 1980. However, when the low-pressure sewers carrying wastewater from the Conconully Lake and Shady Pines STEP systems were connected to the town's gravity collection system in 1991, odor complaints were received by the city and county almost immediately. Investigation revealed that gases were generated by anaerobic conditions in septic tanks and low-pressure sewers when the wastewater entered the town's gravity collection system. One of the gases identified was hydrogen sulfide, with its associated odors and dangerous potential for explosion.

The solution finally developed was to bypass the town's gravity collection system and inject wastewater from Conconully Lake and Shady Pines into the 6-inch force main downstream of the existing pump station. Intermediate pump stations were constructed where the low-pressure sewers crossed the town limits, and new low-pressure sewer lines were laid to the existing pump station, effectively extending the low-pressure STEP system sewer lines.

A vital part of this system upgrade was the construction of a pressure equalization chamber. The equalization chamber has two purposes: 1) to maintain headspace air pressure to within 0.50 psi of ambient atmospheric pressure, and 2) to allow venting of sewer gasses. The chamber contains

approximately 40 cubic yards of well-sorted gravel contained in a geotextile membrane. Treatment plant staff report that the new odor control system is working well.

The 2003 Facility Plan identified severe corrosion damage to the lift station, due to years of exposure to hydrogen sulfide gas. Corrosion has eaten away the concrete and exposed the rebar. The Plan recommends repairing the structural damage with a coating of epoxy and replacement of all electrical components. In addition, the Plan recommends addressing the lack of backup power by installing a emergency power generator.

An infiltration and inflow (I&I) evaluation contained in the 2003 Facilities Plan concluded that, due to the relatively minor differences between wet-weather and dry-weather flows, I&I is not a concern at this time.

No expansion of the collection system or treatment plant is planned by the Town, at this time.

Treatment Processes

Lagoon System

The Town's lagoon system consists of three ponds with a total area of 5.32 acres. Untreated wastewater from the collection system enters either the primary or secondary lagoon cell, where solids settle and undergo anaerobic decomposition. After this primary treatment, the wastewater undergoes secondary treatment, a biological reaction in which dissolved and suspended organic matter is oxidized (converted) by bacteria into stable end products and the BOD and suspended solids levels are reduced. In the third, or maturation cell, wastewater is polished by removing additional BOD and suspended solids.

In evaluating the lagoon system, the Facility Plan addressed four areas of concern. These were the (1) hydraulic and (2) BOD loading capacities of the system, (3) treatment of nitrogen, and (4) the source of TSS in the effluent. The primary consideration for evaluating hydraulic loading was winter storage capacity. The Town's consultants concluded the existing lagoon system will provide adequate hydraulic capacity through the 20-year planning horizon.

The method for evaluating BOD capacity for the planning period was to project population growth, express this as BOD loading on the treatment system, and compare this projected loading with the system's design loading. The assessment reaffirmed the BOD summer and winter design criteria established in the original 1986 Engineering Report.

Treatment of nitrogen is a concern because all nitrogen species present in wastewater are subject to oxidation to nitrate, a contaminant that is regulated in the State's Ground Water Quality Standards (Chapter 173-200 WAC). The Town's analysis of nitrogen treatment in the lagoon system focused on ammonia. Influent concentrations range from 12 mg/L to 25 mg/L and effluent concentrations are generally less than 1 mg/L. The report concluded that, due to the

long detention times, ammonia removal will continue to be in the upper portion of the 60 to 95 percent removal range typical for facultative lagoon systems.

In the context of nitrogen loading to the sprayfield, the assessment concluded that the majority of nitrogen in the effluent appears to be organic nitrogen that is associated with algae. This is important because nitrogen associated with particulate matter will not be as likely to pass through the soil column below the root zone and contaminant ground water. Rather, nitrogen associated with particulate matter will tend to be captured by the soil matrix and become available as a nutrient to the sprayfield crop as the organic nitrogen is broken down by soil microbes into more readily available forms of soluble nitrogen (ammonia and nitrate). (Facility Plan, pp. 5-4 to 5-10)

Sprayfield

Treated effluent is land applied to a 22-acre sprayfield; however, only 15.2 acres are currently in use. A single 15-horsepower centrifugal pump provides pumping. Spray irrigation is provided by a big gun sprinkler. The sprayfield is adjacent and east of the lagoon. Alfalfa is the only crop grown on the sprayfield. The Town has an agreement and an easement for the sprayfield.

The sprayfield assessment conducted in support of the Facility Plan found soil nutrient levels to be within normal ranges, indicating that the 20 years of lagoon effluent application has not caused excessive nutrient loading. Additionally, there is no evidence of excessive cropping without fertilization. A nitrogen balance indicates that the net available nitrogen from the lagoon effluent is less than what the sprayfield crop uptake is likely to be.

Another typical constituent of concern in land applied municipal wastewater is total dissolved solids (TDS). Results from 11 effluent samples taken from 1999 through 2001 indicate TDS concentrations consistently below the ground water criterion of 500 mg/L. The sprayfield crop is moderately salt-tolerant and there is no evidence of salt build-up in the soil profile.

In addition to assessing lagoon and sprayfield loadings the Town's consultants evaluated the sprayfield's compliance with the State Department of Health's *Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health Protection, February 1994*. Specific areas of concern included requirements for setback distances and disinfection. Setback and disinfection requirements are linked. The setback distances required depend on the degree of disinfection achieved during upstream treatment processes. The Town has not installed an active disinfection process, such as chlorination or ultraviolet light. However, the long lagoon retention times have historically resulted in fecal coliform counts of less than 50 colonies/100 mL, well below the Department of Health's standard of 200 colonies/100 mL. The Facility Plan concluded that, as the sprayfield is presently configured, all minimum setback requirements have been met. These requirements include minimum setback distances of 1,000 feet from the sprayfield boundary to any residential area, school or playground, and at least 500 feet to any residence or

domestic well. In addition, only the landowner and the treatment plant operator have access to within 100 feet of the sprayfield boundary.

Residual Solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill.

Due to the natural anaerobic degradation of sludge at the bottom of the lagoons, the Town has not yet had to remove sludge from the lagoons. The Town and the Department anticipate fulfilling the requirements of the State's Biosolids Program during the Spring of 2004.

PERMIT STATUS

The previous permit for this facility was issued on March 10, 1999.

An application for permit renewal was received by the Department on August 26, 2003 and accepted by the Department on September 9, 2003.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

A compliance inspection without sampling was conducted on June 11, 2003.

During the history of the previous permit, the Permittee has remained in compliance based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department.

WASTEWATER CHARACTERIZATION

Influent

Loadings to the POTW were reported in DMRs submitted to the Department and were summarized for the years 1999 through 2001 in the Facility Plan, Appendix B. These influent loadings are compared with the applicable design criteria in Table 1. Influent loadings are characterized separately for winter months and summer months because this is the format of the facility's design criteria.

Table 1 contains a discontinuity concerning flow. The 1986 Facility Plan established design loadings in terms of summer (May through October) and winter (November through April). The 2003 plan revised the design criteria for hydraulic capacity and established a design loading for the winter season (October through April) only. The assumption was that if the lagoons have

sufficient hydraulic capacity to accommodate winter storage, then a flow design loading for summer is unnecessary. The new plan reaffirmed the existing BOD design loadings.

Table 1: Influent Characterization

Parameter	Maximum Monthly Lagoon Loadings			Current Design Criteria
	1999	2000	2001	Monthly Average for the Maximum Month
BOD ₅ , in lbs/day, May thru October	76	54	62	165
BOD ₅ , in lbs/day, November through April	26	34	36	50
Flow, in GPD, May thru October	57,393	50,510	46,577	Not Applicable
Flow, in GPD, November through April	26,467	29,667	22,421	39,000 October thru April

Effluent

The concentrations of pollutants in the discharge were reported in Appendix B of the 2003 Facility Plan. Discharges to the sprayfield generally occur during a four-month period in the summer, e. g., June through September. Sampling of lagoon effluent is required once per month, and only during irrigation season. The effluent is characterized as follows:

Table 2: Effluent Characterization

Parameter	Maximum Monthly Lagoon Discharge to the Sprayfield			Discharge Standard ^a /Ground Water Quality Criteria ^b
	1999	2000	2001	
Soluble BOD ₅ , in mg/L	13.5	26.2	210	45 ^a
TSS, in mg/L	130	183	60	45 ^a
Total Ammonia, in mg/L	1.9	0.07	10.7	No established standard
Total Kjeldahl Nitrogen (TKN), in mg/L	13.8	18.9	18.2	No established standard
Total Nitrate (NO ₃), in mg/L	0.7	0.1	0.1	10 ^b
Total Phosphorus, in mg/L	2.5	4.0	4.5	No established standard
Total Chloride, in mg/L	35.4	27.5	10.1	250 ^b
Total Dissolved Solids (TDS), in mg/L	340	442	400	500 ^b
Fecal Coliform Bacteria, #colonies/100 mL	23	8	50	200 ^c

- a-Average monthly discharge standard for waste stabilization ponds, in WAC 173-221-050(2).
- b-Ground Water Quality Criteria, in WAC 173-200-040, Table 1.
- c-Definition of disinfected wastewater, in *Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health*, Washington Department of Health, February 1994.

Overall, the Town's lagoons provide a level of treatment typical of such systems. Its important to note that the effluent characterization in Table 2 does not reflect the land treatment (sprayfield) portion of the treatment operation. Thus, although TSS effluent concentrations annually peak in August or September as a result of algae blooms growing in the ponds, analysis of sprayfield soils has provided no evidence that sprayfield application of treated wastewater has degraded soil quality or the ground water quality in the sprayfield.

SEPA COMPLIANCE

Appendix G of the approved Facility Plan contains a completed State Environmental Policy Act (SEPA) checklist and Determination of Non-Significance (DNS) in fulfillment of State environmental review requirements. Appendix H contains a completed State Environmental Review Process (SERP) checklist in fulfillment of State responsibilities of the National Environmental Policy Act.

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable methods of prevention, control and treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the sprayfield that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring AKART for discharges to waters of the State (WAC 173-216-110). AKART was determined in the approved Facility Plan. The Facility Plan is dated January 2003, and was approved by the Department on February 18, 2003. AKART for this treatment facility is based primarily on a combination of State Departments of Ecology and Health regulations and policies. Relevant Ecology regulations include Chapter 173-221, which details waste stabilization pond discharge standards, and Chapter 173-200, which contains the State's Ground Water Quality Standards. Department of Health's sprayfield standards, which primarily address setback distances, are contained in *Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health*, dated February 1994. This document also requires quiescent settling storage in the treatment lagoons of at least seven days to ensure removal of ova and cysts. In addition, State and Federal regulations govern the utilization of biosolids, but this issue will be discussed in the Residual Solids Handling section of this fact sheet.

The Facility Plan also explored the potential for the Town to develop a reclaimed water facility, but this option was rejected due to the prohibitive costs associated with such a facility.

The Facility Plan assessed treatment efficacy of the Town's lagoons for all relevant pollutant constituents (BOD, nitrogen, fecal coliform bacteria) and found the system to be operating in compliance with State performance standards for this type of treatment system. Among the factors considered were the BOD removal rate, treatment of nitrogen and reduction of pathogenic organisms. Furthermore, the assessment concluded that discharge of lagoon effluent to the land treatment system is protective of sprayfield soils and ground water quality, as long as the Town continues its compliance with the established sprayfield loading limits. This conclusion was based upon a detailed analysis of sprayfield soils. In addition, the assessment anticipated that the lagoon system will provide adequate winter storage of flows for the 20-year planning horizon.

Table 3 contains the lagoon effluent limits for this permit. The BOD and TSS discharge standards in WAC 173-221-050(2) were not specified in this permit as effluent limits because lagoon treatment constitutes only part of the treatment system; the sprayfield comprises the final treatment process. The ultimate point of compliance for the Town's discharge is now ground water. With the establishment of the ground water monitoring network, the Town and the Department have a direct method of verifying that the discharge is in compliance with the State's ground water quality standards. The approved Facility Plan contains annual hydraulic and nitrogen loading limits on the sprayfield that constitute the best approximations of the loading capacities of the sprayfield. However, these values may be revised in the future based on results of ground water monitoring.

The fecal coliform bacteria limit of 200 colonies/100 mL is based on the State Department of Health's disinfection requirement specified in the *Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health*. WAC 173-221-040(2) contains an average weekly

limit of 400 colonies/100 mL and a monthly limit of 200 colonies/100 mL, that were used in error in the previous permit; however, Health's limit is specific to application of effluent to land treatment systems, and Ecology is required to use the more stringent limit in this permit. The pH limit is specified in WAC 173-221-040(3). The revised effluent limits in this permit are as follows:

Table 3: Lagoon Effluent Limitations

EFFLUENT LIMITATIONS	
Parameter	Average Weekly
Fecal Coliform Bacteria	200 colonies/100 mL ^a
pH	Between 6 and 9 at all times
a-The average weekly effluent limitation for Fecal Coliform Bacteria shall be based on the geometric mean of the samples collected during a calendar week.	

The Department acknowledges that fecal coliform bacteria is limited on a weekly basis, and that the lagoon effluent is monitored once per month. However, in consideration of the high level of treatment the lagoon system has historically provided for removal of pathogenic organisms (see Table 2), the Department feels that once per month sampling for this parameter is appropriate for this facility. The average weekly limit will, in effect, function as an average monthly limit as long as monitoring occurs on a monthly basis. In the event fecal coliform levels discharged to the sprayfield rise, the monitoring frequency for this parameter can be increased through an Administrative Order or permit modification.

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Table 4: Ground Water Quality Criteria

Parameter	Criterion
Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units

The Department has reviewed existing records and is unable to determine if background ground water quality is either higher or lower than the criteria given in Chapter 173-200 WAC. The previous permit required the Town to prepare a ground water monitoring plan and establish appropriate monitoring wells, and these tasks were recently accomplished; however, the permit neglected to require monitoring to commence once the wells were established. Therefore, until enough ground water data has been provided to adequately characterize background conditions, the Department will use the criteria expressed in the regulation in this permit.

The analysis of soils conducted in support of the Facility Plan indicates past discharges have not caused buildup of nutrients or pollutants in sprayfield soils; therefore, discharges authorized by this proposed permit are not expected to interfere with beneficial uses of ground water. However, the question as to whether the discharges are impacting ground water quality will not be answered definitively until the monitoring wells have begun yielding data.

Ground water is presently being monitored at three locations in the vicinity of the lagoon/sprayfield site. A domestic well northeast of the site provides background water quality data. An irrigation well east and downgradient of the lagoons that withdraws from the surficial aquifer is expected to provide data showing any impacts the lagoons may have on ground water quality. The third monitoring point is a built-for-the-purpose ground water monitoring well installed in October 2002 in the middle of the sprayfield. Although some preliminary sampling has occurred, the Town was waiting for approval of the Facility Plan and Ground Water Monitoring Plan (Appendix F) to begin sampling in earnest. The sprayfield monitoring well has, until this time (Winter, 2004), been dry. The Town's consultants attribute the lack of water in the well to the recent string of drought years and the likelihood that the evapotranspiration rate exceeds the amount of infiltrating precipitation and applied wastewater. The Department anticipates that by the next permit renewal, in approximately five years, enough data will be available to ascertain any impacts the discharge may be having on ground water quality. At that time, the Department will evaluate the need for ground water limitations.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the permit under Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

Influent and effluent monitoring schedules, specified in Special Condition S2.A, have been revised from the previous permit. Historically, the Town has not taken composite samples of its influent, although it was a requirement of the previous permit. The Department feels composite sampling of influent wastewater is necessary to provide a more complete picture of nutrient loadings to the lagoon system. Special Condition S2.D requires that sampling be *representative of the volume and nature of the monitored parameters*. Therefore, Special Condition S2.H of this permit requires the installation of a composite auto sampler to monitor pollutant loadings to the lagoons. The auto sampler is required to be sited to allow sampling of the combined wastewater flows from the Town's collection system *and* the STEP systems.

Revisions to the effluent monitoring schedule are due to the encouraging results of the soil analysis done in support of the Facility Plan and the impending start of ground water monitoring. Specifically, requirements for the sampling of ammonia, total phosphorus and dissolved oxygen in the discharge to the sprayfield have been removed from this permit. As specified in the previous permit, effluent monitoring is only required when discharging to the sprayfield.

Composite monitoring is not as vital for discharges to the sprayfield, since analysis indicates the soils are lightly loaded with nutrients and the Town irrigates only occasionally. However, in the event loadings to the sprayfield increase to the point at which impacts to the soils or ground water are revealed through monitoring, the Department may require installation of an effluent composite auto sampler through an Administrative Order or at the next permit renewal.

SOIL MONITORING

Before now, the Town has not had a formal monitoring program to routinely evaluate sprayfield soils. However, the previous permit required the Town to develop such a program as part of the Sprayfield Management Plan, which is contained on page A-3 of Appendix I of the approved Facility Plan. This permit requires the plan to be incorporated into the facility's O&M Manual.

The soil monitoring program was designed by the Town's consultants. The Department feels that the plan is a reasonable and effective method to routinely monitor sprayfield soils. Its reasonable

because it's only required to be conducted once a year, at the end of each irrigation season, before the start of winter. The program is effective because it directly measures the amount of nutrients that were not taken up by the crop and provides feedback on the nutrient loading needed for the next growing season. The Department anticipates that sprayfield monitoring will be an essential tool to routinely assess the effectiveness of the land treatment process, especially since during times of drought the water table may decline enough to preclude sampling of the ground water monitoring well.

GROUND WATER MONITORING

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that this discharge has a potential to pollute the ground water. Therefore, the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation. The ground water monitoring program is specified on pages A-4 and A-5 of Appendix I of the approved Facility Plan. This permit requires the ground water monitoring schedule to be incorporated into the O&M Manual.

This permit contains a provision, Special Condition S2.G, which allows the Town to request a reduction in the monitoring program after an adequate characterization of ground water quality has been completed. Generally, an adequate characterization requires 8-10 data points for each well. The Department anticipates that as a statistical relationship between loadings to the sprayfield and ground water quality is established, some of lagoon effluent monitoring can be reduced.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The provisions of Special Condition S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

FACILITY LOADING

The design criteria for this treatment facility are taken from Table 5-7 of the *Town of Conconully Wastewater Treatment Facility Plan*, prepared by Gray & Osborne, and are as follows:

Table 5: Design Criteria for the City of Town of Conconully POTW

Parameter	Design Criteria	Basis
Hydraulic-Lagoons (October-April)	39,000 GPD	Provide adequate winter storage
Hydraulic-Sprayfield (May-October irrigation)	32.5 inches/acre-year	Meet crop water requirement with 65-percent irrigation efficiency
Organic (November-April)	50 lbs BOD ₅ /day	Ability to achieve 65% BOD ₅ removal
Organic (May-October)	165 lbs BOD ₅ /day	Ability to achieve 65% BOD ₅ removal
Nitrogen-Sprayfield	250 lbs N/acre-year	Crop nitrogen requirement

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). The Permittee is required to submit a Plan to Maintain Adequate Capacity when the plant reaches 85% of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report (WAC 173-216-110[5]).

OPERATIONS AND MAINTENANCE

This permit contains Special Condition S5, as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The Town submitted an updated O&M Manual in January 2003, as required by its permit. In a letter dated February 9, 2003 the Department stated that the updated manual did not fulfill the requirements of WAC 173-240-080, but in consideration of the impending upgrade of the lift station, the Department would defer fulfillment of this requirement until completion of the upgrade.

The upgrade of the lift station is anticipated to be completed in March 2004. Therefore, this permit requires submittal of an updated O&M Manual early in the permit cycle. The Department acknowledges that the two main components of the treatment works, the lagoon system and the sprayfield, have not undergone any material changes in the last 20 years. However, the manual is required to address recent changes, such as O&M of the new lift station and minimal staffing required to operate and maintain the entire treatment works. In addition, the update submitted to

the Department in February 2003 contained the Sprayfield Management Plan, as required, which addresses the comprehensive monitoring requirements of this permit but does not contain the design criteria (loading limits) for the lagoons and sprayfield.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in Special Condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080, Chapter 173-350 WAC and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 173-308 WAC, "Biosolids Management". The disposal of other solid waste is under the jurisdiction of the Okanogan County Health Department.

PRETREATMENT

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore, notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

GENERAL CONDITIONS

General Conditions are based directly on State laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1. requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2. requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3. specifies conditions for modifying, suspending or terminating the permit. Condition G4. requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5. requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6. requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7. prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8. requires application for permit renewal sixty (60) days prior to the expiration of the permit. Condition G9. requires the payment of permit fees. Condition G10. describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for five (5) years.

REFERENCES FOR TEXT AND APPENDICES

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp.

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 16, 2003 in the Wenatchee World to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on April 14, 2004 in the Okanogan County Chronicle to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509/457-7105, or by writing to the address listed above.

APPENDIX B--GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring--Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5, 3, or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the State of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C--RESPONSE TO COMMENTS

The only comment concerning the draft permit was received from the Town. The Town had originally requested that influent monitoring for hydrogen sulfide from the Okanogan County STEP system be included in Special Condition S2.A of the permit. Upon further consideration and after public review, the Town has requested that this testing requirement be removed from the permit.

In accordance with the Town's request this monitoring requirement has been removed from the permit.